

Severe bradycardia and asystole in a dog after intravenous metoclopramide injection

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A 5.5-month-old female English-Bulldog with a history of resolved bronchopneumonia was scheduled for a CT scan and corrective surgery for a brachycephalic obstructive airway syndrome. Clinical examination was otherwise unremarkable. The dog was premedicated intravenously with maropitant (1 mg kg^{-1}), pantoprazole (1 mg kg^{-1}) and acepromazine ($20 \mu\text{g kg}^{-1}$). Anaesthesia was induced 105 minutes later with alfaxalone IV (2 mg kg^{-1}) following 5 minutes of preoxygenation and the trachea was intubated. Physiological parameters post-induction were unremarkable (HR 100 bpm, MAP 75 mmHg) and isoflurane in oxygen administration was started. Five minutes later, metoclopramide IV (1 mg kg^{-1} , Emeprid solution injectable, Ceva, France) was administered over one minute. Immediately after, the dog developed sinus bradycardia (4 bpm) rapidly progressing to asystole, a drop in EtCO₂ and apnoea. Cardiopulmonary resuscitation was started, isoflurane discontinued, and atropine ($40 \mu\text{g kg}^{-1}$) administered IV as first-line treatment. Within one-minute, spontaneous circulation was restored and hemodynamic parameters stabilized (HR 140 bpm, MAP 78 mmHg, EtCO₂ 43 mmHg). The CT-scan and surgery proceeded without complications. The dog recovered and was discharged the same day. A Naranjo probability score of 6 suggested a probable causal relationship between metoclopramide and the arrhythmia. No alternative cause for the cardiac arrest was identified after a thorough case review.

Metoclopramide-induced severe bradycardia and cardiac arrest has been reported in humans, potentially due to sodium channel inhibition (Stoetzer et al. 2017, Rumore 2012). To our knowledge, metoclopramide-induced asystole has not been reported in dogs. This dog had previously received lower dose of metoclopramide IV (0.5 mg kg^{-1} IV every 8 hours) and orally without complication.

Metoclopramide-induced cardiac arrest was managed due to rapid detection of ECG abnormalities. ECG monitoring appear recommended during high-dose metoclopramide administration in anaesthetised dogs.

References

- Rumore MM. (2012) Cardiovascular adverse effects of metoclopramide: Review of literature. *International Journal of Case Reports and Images* 3(5), 1-10.
- Stoetzer C, Voelker M, Doll T, et al. (2017) Cardiotoxic Antiemetics Metoclopramide and Domperidone Block Cardiac Voltage-Gated Na⁺ Channels. *Anesthesia and Analgesia* 124, 52–60.